

Established and potential repurposed therapeutic candidates for SARS-CoV-2 infection (COVID-19)

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Overview (Hussman 32848776): [Cellular and molecular pathways of COVID-19 and potential points of therapeutic intervention](#)

(Hussman 34239884): [Severe clinical worsening in COVID-19 and potential mechanisms of immune-enhanced disease](#)

See also Baylor University Medical Center: [Clinical outcomes after early ambulatory multidrug therapy for high-risk COVID-19](#)

NOTE: This list does not comprise a set of recommendations, but includes generally well-tolerated medications with potential empiric benefit in COVID-19. These candidates include medications approved by the FDA for *other* conditions, or represent over-the-counter supplements. While their mode of action is consistent with suspected cellular and molecular disease mechanisms, and beneficial outcomes have been indicated in research studies and clinical reports with few adverse side-effects, their use in COVID-19 has generally not been evaluated in large-scale randomized controlled trials. Typical contraindications apply. Provided strictly *to share and discuss with a physician*, not as medical advice.

Prophylaxis: Vaccination

Notably all U.S. FDA approved vaccines encode a pre-fusion spike, which we [consider](#) the safest and most effective design.

Supplements (all over-the-counter, at common recommended dosages):

- **Quercetin:** anti-inflammatory properties, potential synergy with vitamin D and melatonin, zinc ionophore
- **Zinc:** Reduced in-hospital mortality in combination with a zinc ionophore
- **Vitamin D:** attenuated TLR-mediated cytokine induction, reduced cytopathic effect
- **DHA/EPA:** inhibition of TNF-mediated adhesion of inflammatory cells to vascular endothelia
- **Melatonin:** inhibition of NF-kB mediated MMP9 expression, reduced hypoxic stress, inhibition of TNF, IL6, VEGF
- **Artemisinin:** in-vitro inhibition of SARS-CoV-2 infection and RBD binding

Confirmed infection (not for self-medication: ask about and discuss with physician):

- **Paxlovid** – protease inhibitor specific for the viral Mpro (main protease). Inhibits viral replication. FDA EUA issued for individuals positive for SARS-CoV-2 and at high risk of progression to severe COVID-19.
- **In event of secondary bacterial infection: Doxycycline**
Typical dosage. 100mg bid, 5-7 days. Contraindicated if known/intended pregnancy during treatment.
Broad spectrum, pleiotropic effects against pneumonia; antiviral, cardioprotective, anti-inflammatory properties, IL6, MMP9, and NF-kB inhibition, SOCS induction, SARS-CoV-2 main protease (Mpro) May interfere with TLR hyperactivation, cytokine induction mediated by dsRNA intermediates, and recruitment and extravasation of inflammatory leukocytes.
- FDA EUAs issued for **Bamlanivimab** and **Casirivimab/Imdevimab** mAbs for patients at risk of severe progression.

Clinical worsening (not for self-medication: ask about and discuss with physician):

- **Ruxolitinib** (JAK1/2 inhibitor) 20mg bid first 2 days, de-escalated to 10mg bid and 5mg bid over following 12 days. Rapid clinical response in RESPIRE study with no serious side effects. Improved tomographic findings, discharge, pulmonary function, well-tolerated in compassionate use trials.
- FDA EUAs for **Baricitinib**, **Remdesivir** (protease inhibitor, but not specific to SARS-CoV-2)

Acute respiratory distress (not for self-medication: ask about and discuss with physician):

- **Dexamethasone** (corticosteroid). Reduced mortality in patients requiring invasive ventilation in large RCT study.
- **Tocilizumab** (IL6 receptor inhibitor). Combination with dexamethasone reported to increase survival in some groups.
- **Dornase alfa** administration reported to improve respiration via degradation of neutrophil extracellular traps (NETs)
- **Fostamatinib** (Syk tyrosine kinase inhibitor). Inhibits downstream signaling and immune-enhanced disease due to Fc-receptor cross-linking by immune complexes (see Hussman [34239884](#))

Additional references (PMID) (Benefit) Clinical benefit; (M) Mode of action; (C) Contraindication or ineffective context

General discussion: [32848776](#) **Ambulatory care** [33388006](#) **Melatonin** (Benefit) [33083812](#) **Zinc** (Benefit) [33140042](#) **Artemisinin** (M) [32786284](#), [32696720](#) **Doxycycline:** (Benefit) [32873175](#), [32802622](#), [32742970](#), **MRx**, [33388006](#) (M) [32314492](#), [32752944](#), [33142770](#), [32653520](#), [32758890](#), [32696730](#), (C: transient autoimmune response to **Minocycline** [30345250](#)), **Ruxolitinib** (Benefit) [32850921](#), [32470486](#), [32814839](#) [33173161](#) (M) [32636055](#), [32702726](#), **Dornase alfa** (Benefit) [32922804](#), [32993479](#) (M) [32355564](#), **Fostamatinib** [34239884](#), [34667255](#) (M), [34467402](#) (Benefit)